CLAIMS

What is claimed is:

1. A temperature controlled structure for a an oscillator device, comprising:
a package enclosure having a top, a floor, and side walls, and wherein one or more pins extend from said package;
a thermal conductive substrate;
a resonator mounted to said thermal conductive substrate;
two or more insulating structures securing said thermal conductive substrate;
a second substrate secured to said package floor;
one or more interconnects electrically connecting said thermal conductive substrate with said second substrate and with said one or more pins.

2. The temperature controlled structure according to claim 1, wherein said resonator is a surface acoustical wave device and directly bonded to said thermal conductive substrate.

3. The temperature controlled structure according to claim 1, wherein said resonator is a bulk acoustical wave device and secured by a plurality of clips extending from said thermal conductive substrate.

4. The temperature controlled structure according to claim 1, further comprising a heater device, temperature sensor and temperature control circuitry.

5. The temperature controlled structure according to claim 1, further comprising one or more additional substrate layers.

6. The temperature controlled structure according to claim 1, wherein said package is vacuum evacuated.

7. The temperature controlled structure according to claim 1, wherein said thermal

conductive substrate and said second substrate are ceramic.

8. The temperature controlled structure according to claim 1, wherein said insulating structures are glass posts.

9. The temperature controlled structure according to claim 1, further comprising a temperature hood covering one or more of said temperature sensitive components on said thermal conductive substrate.

10. A temperature controlled package for an oscillator, comprising:

A device enclosure having a top, a floor, and side walls, and wherein one or more pins extend from said package, wherein said device enclosure is evacuated;

a thermal conductive substrate;

a surface acoustical wave device directly bonded to said thermal conductive substrate;

two or more insulating posts securing said thermal conductive substrate;

a temperature controller for maintaining an internal temperature above an ambient temperature, wherein said controller uses one or more temperature sensors and one ore more heaters to maintain said internal temperature;

one or more interconnects electrically connecting said thermal conductive substrate to said one or more pins.

11. The temperature controlled package for an oscillator according to claim 10, further comprising a second substrate layer affixed to said floor for housing temperature insensitive components, wherein said interconects electrically connect said thermal conductive substrate layer and said second substrate layer.

12. The temperature controlled package for an oscillator according to claim 11, further comprising one or more additional substrate layers.

13. The temperature controlled package for an oscillator according to claim 12, wherein temperature insensitive components are mounted to said one or more substrate layers.

14. The temperature controlled package for an oscillator according to claim 10, further comprising a temperature hood covering one or more of said temperature sensitive components on said thermal conductive substrate.

15. A resonator package with thermal control, comprising:

a device enclosure having a top, a floor, and side walls, and wherein one or more pins extend from said enclosure;

a thermal conductive substrate having a plurality of temperature sensitive components mounted to said thermal conductive substrate;

a plurality of insulating posts securing said thermal conductive substrate;

a second substrate affixed to said floor of said device enclosure, with a plurality of temperature insensitive components mounted to said second substrate;

one or more second substrate interconnects electrically connecting said second substrate with said one or more pins extending from said device enclosure;

one or more thermal conductive substrate interconnects electrically connecting said thermal conductive substrate to said one or more pins extending from said device enclosure;

a section of printed circuit board, wherein said one or more pins are electrically connected with said printed circuit board and said device enclosure is physically mated with said printed circuit board.

16. The resonator package with thermal control according to claim 15, wherein said resonator package is a surface mount device.

17. The resonator package with thermal control according to claim 15, further comprising one or more interconnects electrically connecting said thermal conductive substrate with said second substrate.

18. The resonator package with thermal control according to claim 15, further comprising a temperature hood covering one or more of said temperature sensitive components on said thermal conductive substrate.

19. The resonator package with thermal control according to claim 15, wherein one of said temperature sensitive components is a surface acoustical wave device directly bonded to said thermal conductive substrate.

20. The resonator package with thermal control according to claim 15, wherein one of said temperature sensitive components is a bulk acoustical wave device secured by a plurality of clips to said thermal conductive substrate.